

## REMARKS

Applicant responds hereby to the Official Action mailed August 18, 2004, from the USPTO. A Petition for extension of time accompanies this Amendment, extending the time for response hereto up to and including December 18, 2004.

Each of claims 1-11 is amended hereby. No new matter has been added.

### Rejection Under 35 USC § 103

In the outstanding Office Action, claims 1-11 were rejected under 35 USC § 102(e) as anticipated by US Patent No. 6,571,208, to Kuhn. Examiner Brandt asserts that Kuhn discloses a method of determining an eigenspace for representing a plurality of training speakers (col. 2, ll. 8-15), the method comprising the following steps:

developing speaker-dependent (SD) sets of models for the individual training speakers while training speech data of the individual training speakers are used, the SD models of a set of models being described each time by a plurality of model parameters (Fig. 2:20; col. 4, ll. 50-53);

displaying a combined model for each speaker in a high-dimensional vector space (model space) by concatenation of a plurality of the model parameters of the models of the sets of models of the individual training speakers to a respective coherent supervector (Fig. 2:22; col. 4, ll. 54-64);

performing a transformation while reducing the dimension of the model space to derive eigenspace basis vectors ( $\underline{E}_e$ ) Fig. 2: 24; col. 4, ll. 65-67; col. 5, ll. 1-5).

Applicant has amended all of the claims, with emphasis on independent claim 1 to more clearly distinguish his inventions from Kuhn. In particular, independent claim 1 now recites the method steps as follows:


developing speaker-dependent (SD) sets of models for the individual training speakers using training speech data of the individual training speakers, wherein the models (SD) of a set of models are each described by a plurality of model parameters;

displaying a combined model for each speaker in a high-dimensional vector space (model space) by concatenation of the plurality of model parameters of the models of the sets of models of the individual training speakers to a respective coherent supervector; and

performing a transformation of the combined model while reducing the dimension of the model space to derive eigenspace basis vectors ( $E_e$ ) using reduction criteria based on mutual variability to realize a context-dependent phoneme which maintains all essential information after said transformation.

While Kuhn does teach a specialized method and application of dimensionality reduction for representing families of high-dimensional data-vectors in linear space, Kuhn does not teach the method as set forth in independent claim 1. Independent claim 1 essentially claims a method, which, among other aspects as claimed, relies on a transformation of ensembles of several simple gaussian/laplacian probability densities (combined models), which are combined to represent one context-dependent phoneme. Such transformation takes place in a much higher-dimensional space than was even considered by Kuhn. Applicant's invention as claimed may be implemented to improve speech recognition for continuously processing very large vocabularies, while Kuhn's method must operate only upon one centroid (allaphone) at a time.

Applicants' undersigned attorney may be reached at the number listed below and would welcome a telephone call from the Examiner to discuss the instant merits in order to further the prosecution and passage to issue of this application.

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